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Response to Office Action dated February 9, 2005
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Art Unit: 2157
Examiner: Najjar
Docket No.: AUS9 2001 0124 US1

REMARKS/ARGUMENTS

Claims 2, 4-7, 9-13, and 15-20 were presented and examined. The Examiner rejected claims 2, 4-7, 9-13, and 15-20 under 35 USC § 103(a), as being unpatentable over Boucher *et al.* (U.S. Patent No. 6,658,480), hereinafter "Boucher". In this response, Applicant has amended claims 4, 11, and 17, canceled claims 6, 7, 19, and 20, and added new claims 21-23. Claims 2, 4, 5, 9-13, 15-18, and 21-23 are now pending. Applicant wishes to thank the Examiner for taking the time to discuss this response with the undersigned representative.

Claim rejections under 35 USC § 103(a)

The Examiner rejected claims 2, 4-7, 9-13, and 15-20 under Section 103(a) as being unpatentable over Boucher. In response to the rejection of independent claim 4, Applicant has amended claim 4 to incorporate the limitations of previously presented claim 7, which is now canceled. Claim 7 as previously presented included all of the limitations of claim 4 and, in addition, a limitation reciting that the verifier executes on an embedded processor of the NIC while the application program executes on the server main processor. The Office Action rejected claim 7 as previously presented as being nonpatentable in view of Boucher. Applicant respectfully traverses this rejection.

A Section 103(a) rejection of claim 7 as previously presented (and claim 4 as currently amended) is improper because the claim recites subject matter that is not suggested by the reference. Specifically, claim 4 as amended herein recites a delegation of network request processing between an embedded processor on the network server NIC and the server's main processor wherein the main processor handles the data retrieval while the NIC verifies the integrity of the request. This delegation of duties between NIC processor and main processor beneficially improves the performance by reducing the latency associated with responding to network requests.

Supporting the Section 103(a) of claim 7 as previously presented, the Office Action indicates that Boucher discloses or suggests the limitations in FIGs 1-7 and columns 7-12. Applicant respectfully submits however that Boucher teaches a network request handling process that does not motivate one to split the processing tasks between a server's NIC and the server's main processor. Instead, Boucher teaches a packet processing invention in which a

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determination is made on whether a received packet is eligible for fast path processing or not. See, e.g., FIG. 3, block 59 of Boucher. If a packet is eligible for fast path processing, Boucher teaches that its NIC, using its DMA capabilities, is entirely responsible for processing the packet. See, e.g., FIG 11C wherein the main or host processor, represented by reference numeral 44, is bypassed entirely when the packet is eligible for fast path processing. If, on the other hand, a packet is not eligible for fast past processing according to Boucher, the packet must traverse the entire protocol packet of the host processor. See, e.g., FIGs 11A, 11B, and 11D of Boucher. Thus, as emphasized by the decisions represented in block 59 and 53 of FIG. 3 of Boucher, Boucher is concerned with determining whether a packet is serviceable on a server NIC or whether the packet must be service by a host processor. Having then made this determination, Boucher performs the protocol processing on whichever processor on the processor that was determined. See, e.g., block 61 of FIG. 3 in which a packet is sent to host processor for processing as opposed to block 65 in which a packet is processed by Boucher's intelligent NIC or INIC. Boucher teaches implementing protocols stacks on the host processor and on the INIC. Packets may then be processed either entirely by the INIC or entirely by the host processor.

The Office Action correctly acknowledges that Boucher does not teach that different parts of a request packet are identified and positioned for further processing by different processing resources. One having the benefit of Boucher would not be motivated to modify Boucher to achieve partial processing of a packet on Boucher's intelligent NIC and partial processing of the same packet by Boucher's host processor because Boucher's teaches that it is beneficial to process packets entirely either on the NIC or entirely on the host processor. There is no teaching or suggestion in Boucher, for example, that in those cases where a packet is determined to be eligible for fast path processing, that it would be in any way beneficial nevertheless to delegate some of the protocol processing to the host processor. To the contrary, Boucher teaches that it is unambiguously desirable to free the host processor from protocol processing whenever possible. See, e.g., FIG 3 and the supporting text of Boucher.

Because the cited reference does not suggest the limitations of claim 4 as amended, Applicant would respectfully request the Examiner to reconsider and withdraw the Section 103(a) rejection of claim 4 as amended and its dependent claims.

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With respect to the rejection of independent claim 11 and 17, Applicant has introduced amendments analogous to the amendments made to independent claim 4 to recite the delegation of packet processing responsibilities between the different processing resources (i.e., the NIC processor and the server processor). For the reasons indicated with respect to the claim 4 amendments, Applicant submits that claim 17 as amended also recites limitations that are allowable over the cited reference and Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claim 17.

In addition to the foregoing, Applicant has introduced a new independent claim 21. New claim recites embedded processor means on the network interface card for verifying frames by receiving the network portion of a data request and determining whether the request was intended for receipt by the server and whether the request contains any errors. In addition the claims server is recited as including main processors means on the server for receiving the data portion of the request and retrieving client data in response. Finally, the claimed server further includes a control mechanism between the embedded processor means and the main processor means for terminating the main processor's retrieving of client data. Support for this claim language is found in the specification as originally filed. See, e.g., FIG 3 including element 304 and the description thereof on in the paragraph beginning on page 6, line 7.

New claim 21 thus recites and explicit control mechanism between the frame verification being done on the NIC's embedded processor and the data retrieval processing being done on by the main processor. This explicit connection is neither taught nor suggested by the cited reference because, as submitted above, Boucher does not advocate sharing of frame processing between multiple processing resources. Moreover, claim 21 recites a configuration in which the NIC's embedded processor is configured as the controlling processor for purposes of processing client requests. In this embodiment, the embedded processor means controls the data retrieval being performed by the main processor means. Boucher does not suggest a configuration in which an embedded processor executing on a peripheral device such as a network interface card acts as a master over the system's main processor. Boucher merely teaches that the main processor may delegate frame processing responsibility to the NIC under appropriate circumstances. Enabling the NIC processor to control the servicing of client requests and delegating the data retrieval processing to the main processor beneficially improves performance

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(reduces latency) by using multiple processing resources in parallel to perform different aspects of the request processing. Because the cited reference neither teaches nor discloses these limitations, Applicant respectfully submits that claim 21 recites limitations that are allowable over the cited reference.

In addition to the foregoing, Applicant has introduced new claim 22 reciting that the data portion, which is processed by the main processor, contains an HTTP header of the request and the network portion also contains the HTTP header. Support for this claim language is found in the specification as filed. See, e.g., paragraph beginning on page 5, line 3. Claim 22 thus recites an embodiment in which, not only is protocol processing delegated to different processing resources, but also a portion of the packet (namely, the HTTP header) is provided to both processing resources. This embodiment recognizes that the data portion processing uses the HTTP header to fulfill the data request while the network processing portion may require the HTTP header to complete the integrity check of the packet. A limitation in which a portion of a packet is sent to both the NIC and a host processor is neither taught nor suggested by Boucher. To the contrary, Boucher teaches that performance is best improved by performing protocol processing on the NIC when possible and, when not possible on the NIC, on the main processor, but, in no case, processing by both of the resources or processing of redundant data by either resource. Accordingly, Applicant submits that new claim 22 recites limitations neither taught nor suggested by Boucher.

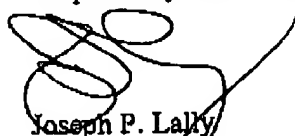
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CONCLUSION

In this response, Applicant has addressed the Examiner's objections, claim rejections under 35 USC § 103(a). Accordingly, Applicant believes that this response constitutes a complete response to each of the issues raised in the office action. In light of the amendments made herein and the accompanying remarks, Applicant believes that the pending claims are in condition for allowance. Accordingly, Applicant would request the Examiner to withdraw the rejections, allow the pending claims, and advance the application to issue. If the Examiner has any questions, comments, or suggestions, the undersigned attorney would welcome and encourage a telephone conference at 512.428.9872.

Respectfully submitted,



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